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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/777,681

02/07/2001

Kazuo Hakamata

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06/02/2004

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EXAMINER

LEE, SHUN K

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/777,681

Applicant(s)

HAKAMATA, KAZUO

Examiner

Shun Lee

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-22 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 2/7/01 & 1/26/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Drawings

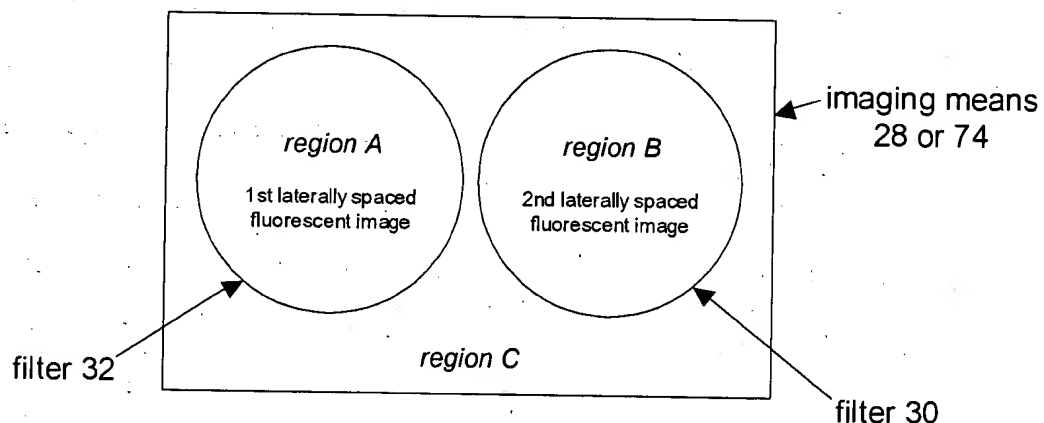
1. The drawings were received on 26 January 2004. These drawings are acceptable.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5, 8, 10, 11, and 15-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lazarev *et al.* (US 5,986,271) in view of Wilder *et al.* (US 5,262,871).



In regard to claims 1-4 and 8, Lazarev *et al.* disclose (Figs. 2, 3, and 8) a fluorescence imaging apparatus, comprising:

- (a) excitation light irradiating means (16) for irradiating excitation light to a measuring site (51), the excitation light causing the measuring site (51) to produce fluorescence (column 5, lines 1-3),
- (b) imaging means (28 or 74) for imaging the fluorescence, which has been produced from the measuring site (51) when the excitation light is irradiated to the measuring site (51), wherein the imaging means (28 or 74) is provided with an image sensor (e.g., a charge transfer type image sensor; column 11, lines 45-55), which comprises a plurality of pixels arrayed in two-dimensional directions and which has a fluorescence imaging region (e.g., an area within region A and/or B) utilized for the imaging of the fluorescence and a non-imaging region other than the fluorescence imaging region, wherein the non-imaging region comprises a region (e.g., an area within region C) where the fluorescence is not received (since a pair of rhomboidal prisms 144, 146 in Fig. 8 or a pair of optical wedges 76 in Fig. 2 is used to produced laterally spaced images that pass through respective ones of filters 30, 32; column 6, lines 50-65; column 10, lines 56-67), and
- (c) imaging control means (34) for controlling operations of the imaging means (28 or 74).

The apparatus of Lazarev *et al.* lacks that the imaging control means controls such that, when signal charges are to be read from the image sensor (e.g., a random access type image sensor), signal charges which have been accumulated in pixels falling within the non-imaging are read (*i.e.*, quick reading or binning reading) and/or prevented from being read. Wilder *et al.* teach (abstract; column 6, lines 40-44; column 17, lines 64-66)

a random access type image sensor wherein multiple regions of interest with each region having a resolution that can be independent of other regions of interest and that all pixels can be read or alternatively some pixels are unread (*i.e.*, prevented from being read). Wilder *et al.* further teach (column 18, lines 7-12) that unimportant pixels can be quickly read out as parts of large superpixels (*i.e.*, binning reading) in order minimize the time consumed in reading unimportant pixels. Therefore it would have been obvious to one having ordinary skill in the art that unimportant pixels (*e.g.*, pixels in region other than the fluorescence imaging region) in the apparatus of Lazarev *et al.* are read (*i.e.*, quick reading or binning reading as parts of large superpixels) and/or prevented from being read, in order to minimize the time consumed in reading unimportant pixels as taught by Wilder *et al.*

In regard to claim 5 which is dependent on claim 3 or 4, the apparatus of Lazarev *et al.* lacks that the image sensor is provided with a clearing section for clearing signal charges, which have been accumulated in pixels. Wilder *et al.* also teach (column 17, line 62 to column 18, line 6) a first reading frame (*i.e.*, clearing section) where pixel signals are discarded in order to prevent spurious data. Therefore it would have been obvious to one having ordinary skill in the art to provide a clearing section (*i.e.*, first reading frame) in the apparatus of Lazarev *et al.*, in order to prevent spurious data as taught by Wilder *et al.*

In regard to claims 10 and 11 (which are dependent on claim 3), claim 20 (which is dependent on claim 1), claim 21 (which is dependent on claim 2), and claim 22 (which is dependent on claim 8), the apparatus of Lazarev *et al.* lacks that the imaging control

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means store data indicating which regions of the image sensor corresponds to non-imaging areas (e.g., on a line by line basis) and regions of reading, prevention of reading, quick reading, or binning of signal charges based on the stored data.

Wilder *et al.* teach (column 4, lines 45-66) that the readout is controlled with supervisory signals from a processor/computer with predetermined pixel readout instructions (*i.e.*, stored data). Therefore it would have been obvious to one having ordinary skill in the art that control of the readout in the apparatus of Lazarev *et al.* occurs via predetermined pixel readout instructions as taught by Wilder *et al.*

In regard to claim 15 (which is dependent on claim 1), claim 16 (which is dependent on claim 2), claim 17 (which is dependent on claim 3), claim 18 (which is dependent on claim 4), and claim 19 (which is dependent on claim 5), Lazarev *et al.* also disclose (Figs. 2, 3, and 8) that said non-imaging region consisting of a region (*i.e.*, region C) where no fluorescence is received.

4. Claims 6, 7, 9, and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lazarev *et al.* (US 5,986,271) in view of Wilder *et al.* (US 5,262,871) as applied to claims 3-5 above, and further in view of Talmi *et al.* (US 5,821,547).

In regard to claim 6 (which is dependent on claim 3 or 4) and claim 7 (which is dependent on claim 5), the modified apparatus of Lazarev *et al.* lacks that the image sensor is provided with horizontal shifting means, from which the signal charges are read in one direction, the imaging control means controls such that the signal charges having been accumulated in the pixels are transferred to the horizontal shifting means and are then read from the horizontal shifting means, and the fluorescence imaging

region is located at a position shifted from a center position on an imaging surface of the image sensor toward a side corresponding to a read-out side of the horizontal shifting means. Lazarev *et al.* also disclose (Fig. 3) that a fluorescence imaging region (e.g., 30) is located at a position shifted from a center position on an imaging surface of the image sensor (28). Talmi *et al.* teaches (column 4, line 58 to column 5, line 3) a horizontal shifting means (*i.e.*, shielded portion) such that the signal charges having been accumulated in the pixels are transferred to the horizontal shifting means in order to increase the signal to noise (column 5, lines 21-40). Therefore it would have been obvious to one having ordinary skill in the art to provide a horizontal shifting means for the off-centered fluorescence imaging region (30) in the modified apparatus of Lazarev *et al.*, in order to increase the signal to noise as taught by Talmi *et al.*

In regard to claim **9** (which is dependent on claim 3) and claim **12** (which is dependent on claim 6), the modified apparatus of Lazarev *et al.* lacks that the non-imaging region is blocked by an opaque film. Talmi *et al.* teaches (column 1, lines 34 and 35) light shielded dark reference rows and columns surround the active area. Therefore it would have been obvious to one having ordinary skill in the art to provide an opaque film for the non-imaging region in the modified apparatus of Lazarev *et al.*, in order to provide dark reference rows and columns as taught by Talmi *et al.*

In regard to claims **13** and **14** which are dependent on claim 6, Wilder *et al.* is applied as in claims 10 and 11 above.

Response to Arguments

5. Applicant's arguments filed 26 January 2004 have been fully considered but they are not persuasive.

Applicant argues (last two paragraphs on pg. 11 of remarks filed 26 January 2004) that region C is *a priori* known is incorrect since Lazarev *et al.* includes lens 78 for focusing a pair of laterally separated images onto the image pick up, and that the lenses have a variable focus and zoom to accommodate endoscopes of varying f-stops. Examiner respectfully disagrees. Lazarev *et al.* state (column 1, lines 43-48) that "Each of the laterally spaced images are passed through respective ones of filters 30, 32 to the photosensitive front surface of LLL image pickup device 28. Beam splitter assembly 58 also includes a lens 78 for focusing the pair of laterally separated images onto the LLL image pickup device 28. Lenses 70 and 78 may be variable focus or zoom type lenses to accommodate endoscopes having field stops of various sizes". However, the key phrase is "may be". Thus implicit within Lazarev *et al.*'s disclosure are non-variable focus or non-zoom type lenses which accommodate endoscopes having field stops of a pre-determined and non-varying size. Therefore, an endoscope field stop (60 in Fig. 2) having a pre-determined size defines the lateral size of the image which is focus onto the second image sensor (28 in Fig. 3) and region C is clearly *a priori* known.

Applicant then argues (last paragraph on pg. 12 to first two paragraphs on pg. 13 of remarks filed 26 January 2004) that Wilder *et al.* teach away from the modification or combination since Wilder *et al.* only permits processing control after a full image

becomes processed. Examiner respectfully disagrees. There is nothing within the disclosure of Wilder *et al.* which teach or suggests that processing control is only permitted after a full image is processed. On the contrary, Wilder *et al.* state (column 4, lines 57-66) that "The supervisory signals control the operation and readout mode of the sensor 10. The supervisory signals produced by the processor/computer 18 and applied to the decoders 12 and 14 may be generated as a result of the processing and analysis of the data previously received from sensor 10. Alternatively, the supervisory signals may be generated by the processor/computer pursuant to predetermined pixel readout instructions supplied to the processor/computer through conventional input devices (not shown)". Thus Wilder *et al.* explicitly teach that processing control can occur without processing and analysis of the data previously received from sensor. Therefore, Wilder *et al.* does not teach away from the modification or combination since Wilder *et al.* permits processing control without processing and analysis of the data previously received from sensor.

Applicant also argues (third paragraph on pg. 13 of remarks filed 26 January 2004) that an addressable memory does not teach a line by line process for preventing image reading. Examiner respectfully disagrees. It should be noted that addressable memory was not used in the grounds of rejection. Wilder *et al.* was cited as teaching (column 4, lines 45-66) that the readout is controlled with supervisory signals from a processor/computer with predetermined pixel readout instructions (*i.e.*, stored data). Further, it is clear from the disclosure of Wilder *et al.* (see *e.g.*, column 5,

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line 25 to column 6, line 65) that selective readout occurs in various modes such as by rows (*i.e.*, a line by line process).

Applicant further argues (last paragraph on pg. 13 of remarks filed 26 January 2004) that region C cannot be covered by an opaque film since Lazarev *et al.* does not contemplate fixed boundaries for the region C. Examiner respectfully disagrees since the fixed boundaries for region C is clearly *a priori* known as discussed above.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SL


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